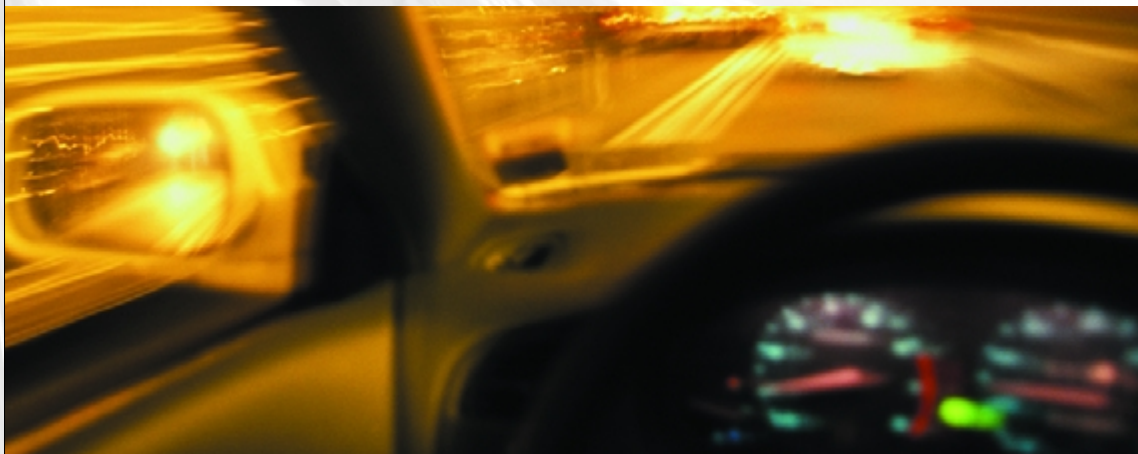




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# Moving Ahead

THE AMERICAN PUBLIC SPEAKS ON ROADWAYS AND  
TRANSPORTATION IN COMMUNITIES



A REPORT FROM THE FEDERAL HIGHWAY ADMINISTRATION



U.S. Department of Transportation  
Federal Highway Administration

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# Moving Ahead

THE AMERICAN PUBLIC SPEAKS ON ROADWAYS AND  
TRANSPORTATION IN COMMUNITIES

February 2001

### *A Letter from the FHWA Executive Director*

In May 2000, the Federal Highway Administration (FHWA) presented its Annual Report *Connecting America: 1999 Report to the Nation*. It showed the changing emphasis in the United States from the construction of new highways to the preservation and operation of existing ones. The FHWA's mission is to continuously improve the quality of our nation's highway system and its intermodal connections. The Annual Report also highlighted the many improvements in the nation's highways, which have resulted from the coordinated efforts of the FHWA; state, local, and tribal governments; other Federal agencies; the transportation industry; and academia. Many of the improvements could not have been made without the support of the American public.

Recognizing the importance of public support, the FHWA has now embarked on an equally important endeavor: to measure public satisfaction with the nation's highways and with community transportation systems. These public opinion surveys provide greater insight into the issues and concerns of the traveling public and help the FHWA understand opportunities for improvement.

The survey results are encouraging: 65 percent of those surveyed are satisfied with the major highways they travel most often, up 15 percentage points since 1995. There has also been a smaller increase of 6 percentage points in dissatisfaction since 1995. Heavier traffic flows and delays while driving through work zones appear to contribute to this increase in dissatisfaction.

The findings in this report—*Moving Ahead: The American Public Speaks on Roadways and Transportation in Communities*—reaffirm the importance of managing work zones, using advanced technologies to improve operations, and enhancing community-oriented transportation projects. These complex challenges, coupled with building and repairing roads, present a new perspective on the public's satisfaction with the nation's highways and offer opportunities for transportation providers to create and maintain the best transportation system in the world.

A handwritten signature in black ink, reading "A R Kane". The letters are cursive and fluid, with the first name "A" and "R" being large and prominent, followed by "Kane" in a slightly smaller, more compact script.

Anthony R. Kane  
*Executive Director*  
*Federal Highway Administration*

# Objectives of the Study

During the past several years, there has been a growing commitment within the highway community to build a better understanding of transportation system performance from the perspective of the user. The major findings of this survey include information on public opinion about characteristics of the transportation system and measures of customer satisfaction. The FHWA conducted this study to:

- ~ Provide national measures of public satisfaction with the nation's highways, community transportation systems and options, and access to and travel on Federal lands.
- ~ Describe travel patterns.
- ~ Understand how community transportation systems affect where people live and work and, thus, indirectly affect community development.
- ~ Identify the public's priorities and preferred approaches to solving transportation problems.

The survey results presented in this report are based on three surveys that the FHWA conducted in 2000: *Operations and Planning/Environment Survey*, *Infrastructure Survey*, and *Federal Lands Highway Survey*.

Both the *Operations and Planning/Environment Survey*, which surveyed 2,057 people, and the *Infrastructure Survey*, which surveyed 2,030 people, are based on telephone interviews with large national probability samples of adults. The margin of sampling error associated with surveys of this size is about  $\pm 2$  percentage points.

The *Infrastructure Survey* is a follow-up to the 1995 *National Highway User Survey* conducted by the National Quality Initiative (NQI), now the National Partnership for Highway Quality (NPHQ). Many questions appear in both the 1995 and 2000 surveys, allowing for comparisons between years. NPHQ's mission is to "address... customers' needs by advocating the use of practices which improve the quality of the nation's highways." NPHQ will use this report to study customer satisfaction trends and direct future activities based on the public's priorities or improving satisfaction.

The *Federal Lands Highway Survey* is based on 1,236 personal interviews with visitors to six National Parks and six National Forests. The margin of sampling error is about  $\pm 3$  percentage points.

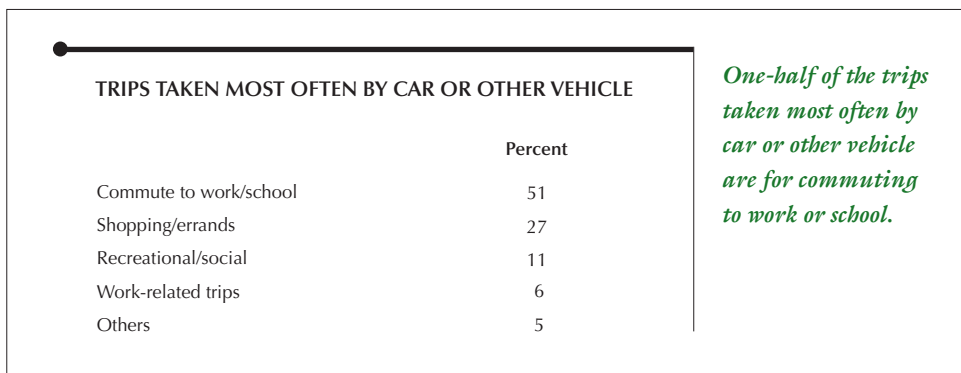
This report begins with a discussion of the study's *major findings* focusing on major highways, transportation systems and options in communities, Federal lands, and actions the public would find helpful. *Study conclusions* are then presented. The report ends with a detailed description *about this study* design and administration and an *appendix* of public satisfaction with major highways.

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# Major Findings

## *Trip Purpose and Trip-Chaining*

About half of survey respondents who travel on the nation's roads named "commutes to work or school" as their most common trip, and another 27 percent named trips for shopping or errands. However, "trip-chaining" makes it difficult to separate commutes from trips for shopping, errands, or other purposes. For example, about 25 percent of commuters report making at least one stop on the way to work; 33 percent report stopping on the way home, and they often make multiple stops on the homeward commute.



Source: Operations and Planning/Environment Survey

T1

## *Overview: Satisfaction with Roadways and Transportation in Communities*

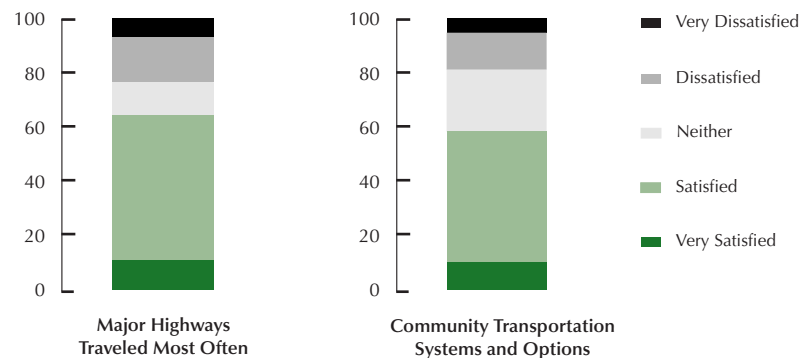
Highway travelers were asked to rate their satisfaction with both "the major highways you use most often" and "the transportation system and the transportation options in your community." They were told that transportation options included "more public transportation choices, or more bicycle and pedestrian paths."

Most highway travelers are satisfied with both the major highways they use and the existing transportation system and options their communities offer. Almost two-thirds (65%) said they were satisfied or very satisfied with major highways, and almost as many (58%) indicated they were satisfied or very satisfied with their community's transportation options. However, the level of satisfaction is not very intense. Only about 10 percent indicated they were "very satisfied" with either the major highways used most often or the transportation options in their community.

There is relatively little dissatisfaction. Only about 20 percent said they were dissatisfied or very dissatisfied with both major highways and their community transportation options.

*Most travelers are satisfied with major highways and community transportation options.*

OVERALL SATISFACTION WITH MAJOR HIGHWAYS AND TRANSPORTATION IN COMMUNITIES (percent)



Source: Infrastructure Survey (2000)

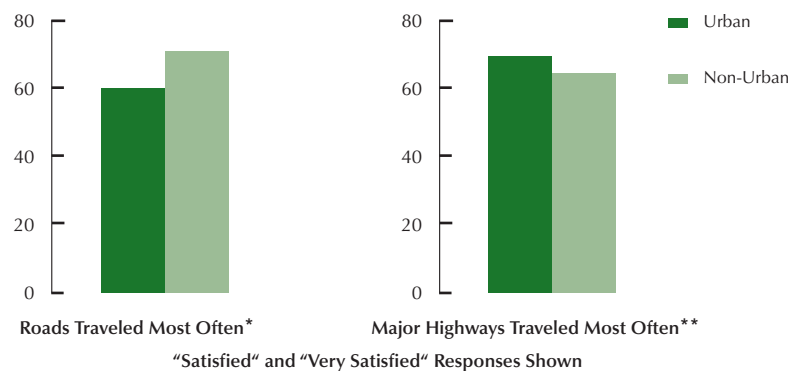
MF1

When respondents were asked about the “roads they use most often,” which included city streets, country roads and minor highways, as well as major highways, urban residents were 60 percent satisfied. Residents of non-urban areas were 72 percent satisfied.

Respondents seem to be equally satisfied with the quality of major highways in both urban and non-urban areas. Residents of urban areas are just about as likely to report being satisfied with major highways (69%) as are residents of non-urban areas (64%). The term “satisfied” includes “satisfied” and “very satisfied” responses.

*There are differences between urban and non-urban residents in satisfaction with roads traveled most often.*

PERCENT SATISFIED WITH ROADS AND MAJOR HIGHWAYS TRAVELED MOST OFTEN



\* Source: Operations and Planning/Environment Survey

\*\* Source: Infrastructure Survey (2000)

MF2

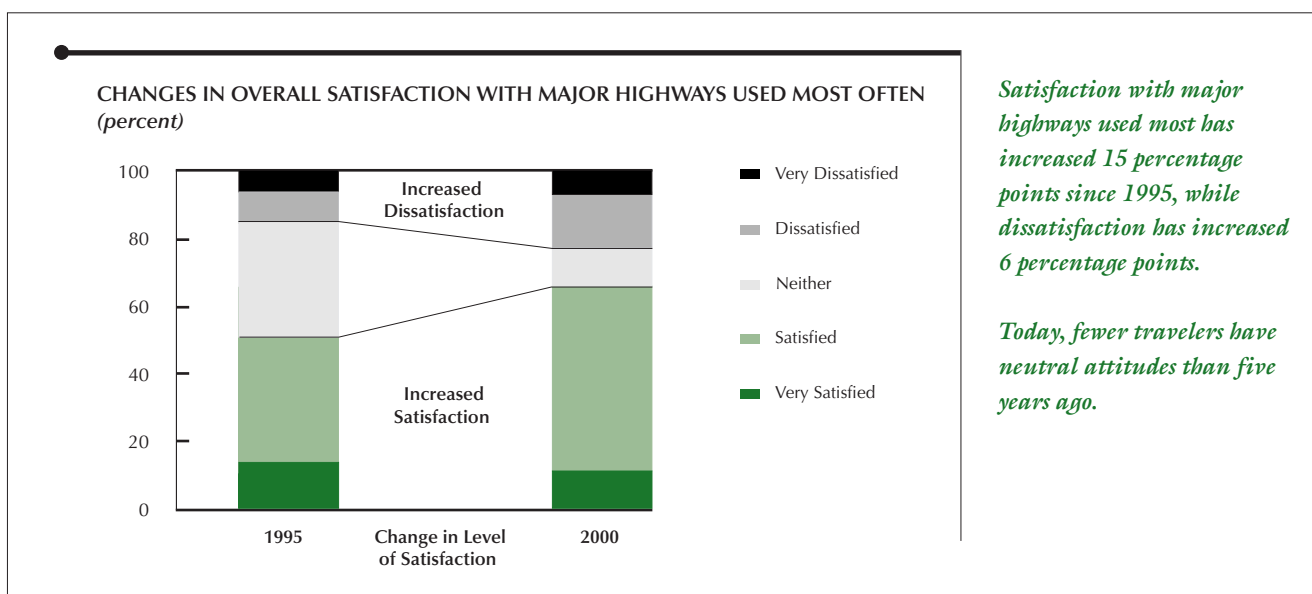
## Satisfaction with Major Highways

### Changes in Satisfaction Since 1995

Highway travelers were asked to rate their satisfaction with the major highways they used most often in 1995 and in 2000.

From 1995 to 2000, there has been a substantial increase of 15 percentage points in satisfaction with major highways (from 50% to 65%). There has also been a 6 percentage point increase in dissatisfaction. The term “dissatisfied” refers to “dissatisfied” and “very dissatisfied” responses.

Today, fewer travelers have neutral attitudes about the major highways they use most often than they did five years ago.



Sources: Infrastructure Survey (2000)  
NHI National Highway User Survey (1995)

MF3



### Factors Contributing to Greater Satisfaction

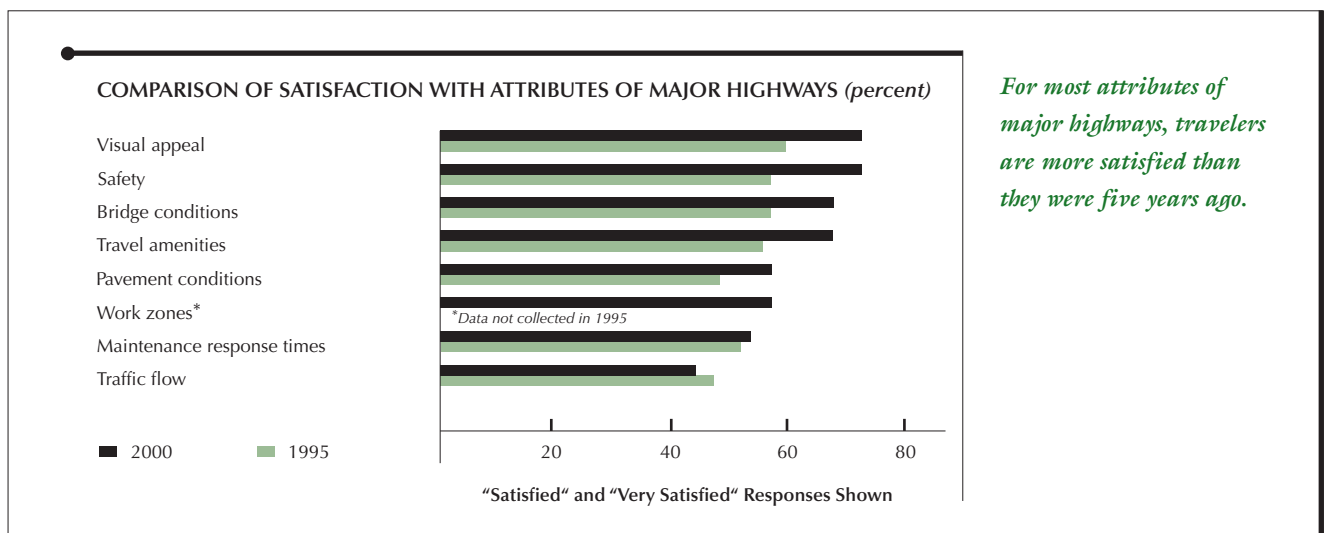
For many attributes of the major highways used most often, travelers were more satisfied in 2000 than in 1995. These attributes include:

- ~ Visual Appeal (outdoor advertisements, landscaping, appearance of sound barriers)
- ~ Safety (roadway lighting, shoulder width, safety barriers)
- ~ Bridge Conditions (visual appearance, durability, smoothness)
- ~ Travel Amenities (roadside assistance, mileage signs, number of rest areas)
- ~ Pavement Conditions (surface appearance, durability, quiet ride)

The improved quality of these attributes probably contributed to the general increase in overall satisfaction with major highways. Significant increases in public satisfaction with various highway attributes are a good indicator of general improvements in their overall quality. For example, pavement and bridge conditions, which both increased in public satisfaction from 1995 to 2000, showed significant increases in their measured physical conditions. The percentage of deficient bridges (classified as structurally deficient and/or functionally obsolete) on the National Highway System (NHS) dropped from 26.3 percent to 23.0 percent from 1993 to 1999. Similarly, the percentage of miles on the NHS with an acceptable ride quality (based on an International Roughness Index [IRI] value of less than 170 in/mi) increased from 90.0 percent to 93.0 percent from 1995 to 1999.

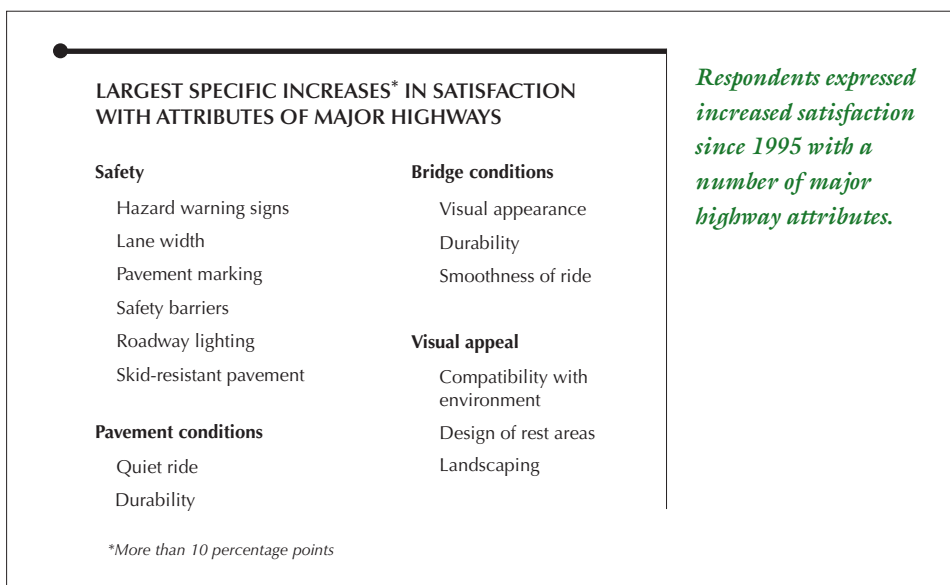
Similarly, decreasing trends in satisfaction can be an indicator of potential areas for quality improvements. Traffic flow, which decreased in public satisfaction from 1995 to 2000, showed negative trends in related physical measurements. The estimated percentage of daily travel occurring under congested conditions increased from 32.0 percent to 32.8 percent from 1996 to 1999, and the estimated average annual number of hours of travel delay increased from 28 hours in 1996 to 32 hours in 1999.

The two lowest rated attributes in 2000 were maintenance response time and traffic flow. Satisfaction with maintenance response time increased slightly, while satisfaction with traffic flow decreased. Fewer than half of highway travelers said they were satisfied with traffic flow, and only slightly more than half said they were satisfied with maintenance response time.



Sources: Infrastructure Survey (2000)  
NHI National Highway User Survey (1995)

MF4

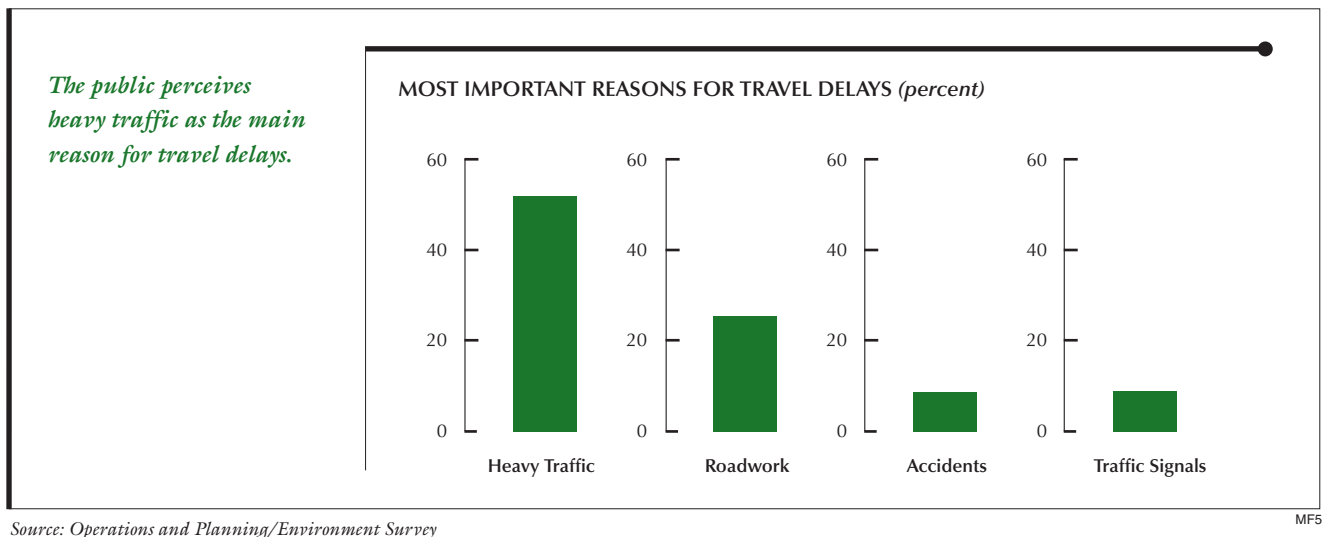


T2

### Factors Contributing to Greater Dissatisfaction

Travelers who reported trip delays were asked to name the main reason for them.

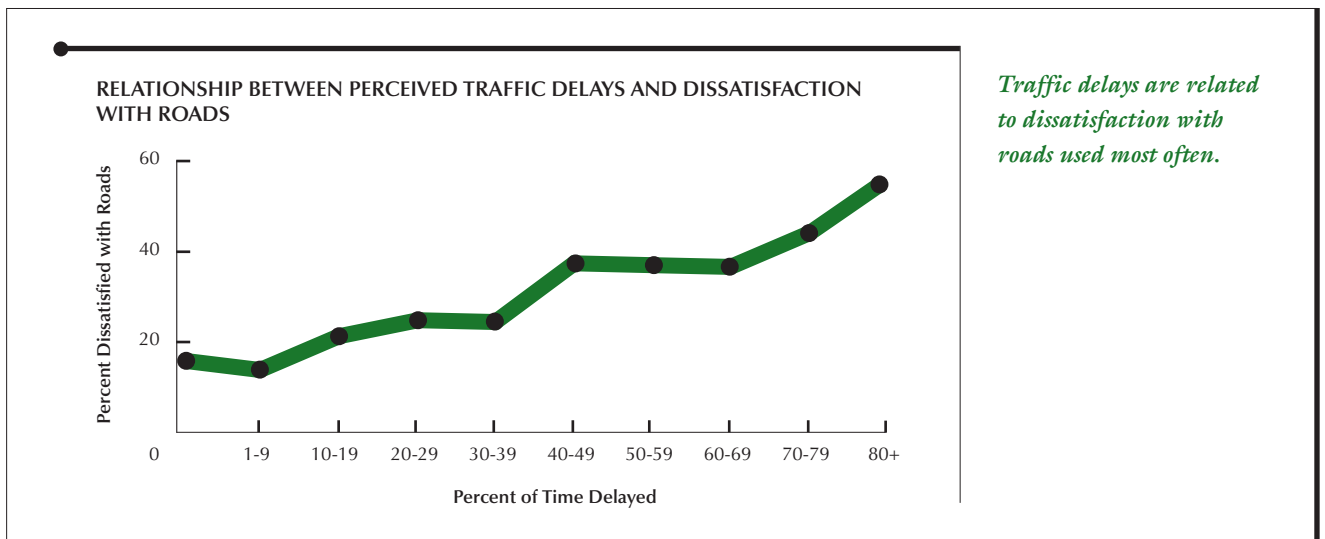
Heavy traffic is perceived to be by far the most important reason for travel delays (53%). This is twice the number for roadwork and five times the number for either accidents or traffic signals.



This finding is not surprising. Over the last two decades, traffic congestion has been growing in both large metropolitan areas and in small urban areas (less than 500,000 population). In fact, smaller urban areas have seen peak period congestion grow more rapidly than large metropolitan areas. In 1982, only one-third of peak period travel was congested in smaller urban areas, while in 1997 two-thirds was congested. During the same years, the percentage of travel in the small urban areas increased from 14 percent to 36 percent during congested peak periods.

From the infrastructure perspective, the number of miles driven is increasing faster than road capacity. Nationally, there was a 10.8 percent increase in licensed drivers from 1990 to 1998 and a 22.4 percent increase in vehicle miles traveled (VMT). During the same period, there was a 1 percent increase in the number of lane miles on roadways.

Travelers were asked for the percentage of time their trip is delayed due to traffic congestion or other problems. Responses varied from little or no delay to more than an 80 percent delay in their usual travel time. Travelers who are delayed frequently are more likely to be dissatisfied with the roads they travel than are those who are seldom delayed.



Source: Operations and Planning/Environment Survey

MF6

There has also been a large increase (20 percentage point average) in dissatisfaction with all elements of traffic flow on major highways during the past five years. In 2000, 43 percent of respondents expressed dissatisfaction with traffic flow, compared to 23 percent in 1995. This may explain some of the 6 percentage point increase in dissatisfaction with highways. Thirty-two percent of respondents expressed dissatisfaction with work zones, the second highest indicator of dissatisfaction among attributes of major highways.

heavy traffic  
is the most important reason for travel delays

*Respondents' dissatisfaction with traffic flow contributes significantly to increased dissatisfaction with major highways.*



Sources: Infrastructure Survey (2000)  
NQI National Highway User Survey (1995)

MF7

Additional analysis was conducted examining all of the factors measured in the survey that could have contributed to changes in satisfaction since 1995. This analysis suggested that concerns about pavement durability and smoothness also may have contributed to the 6 percentage point increase in dissatisfaction with major highways.

However, it is important to note that these factors explain only 20 percent of the reasons for dissatisfaction, indicating other unmeasured factors have greater impact than those measured in this survey.

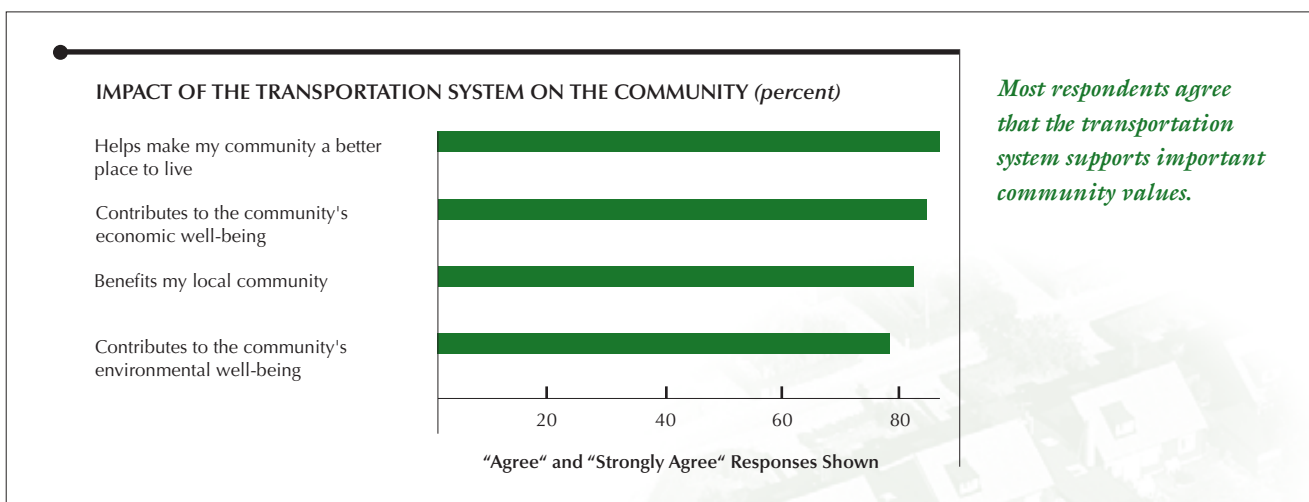
today...

*fewer travelers have neutral attitudes  
about major highways they travel most*

## *Satisfaction with the Transportation System and Options in Communities*

Respondents were asked a series of questions about their community's transportation system, which includes roads, public transportation, bikeways and pathways, and how well it supports desirable lifestyles.

Nearly three in four responded positively about how the transportation system supports important community characteristics. These include making the community a better place to live and contributing to both economic and environmental well-being.



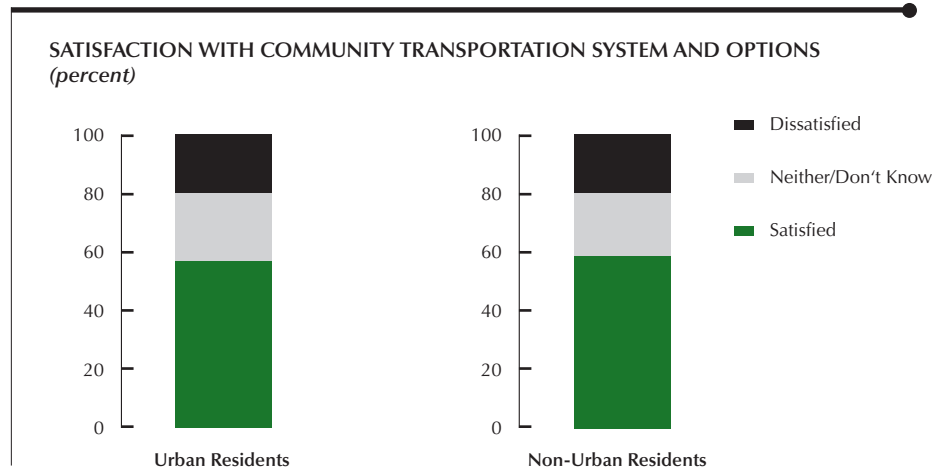
Source: Infrastructure Survey (2000)

MF8

To further explore satisfaction with the transportation system and options in communities, two distinct questions were asked. One dealt with personal satisfaction with the community transportation systems and options. The second focused on how well the community transportation met the needs of most people, people with disabilities, and children/young adults.

About six in ten respondents living in both urban and non-urban areas are satisfied with their community's transportation system and options. Twenty percent of both urban and non-urban respondents are also dissatisfied with the community transportation system and options.

*Satisfaction with transportation options is equal in urban and non-urban areas.*



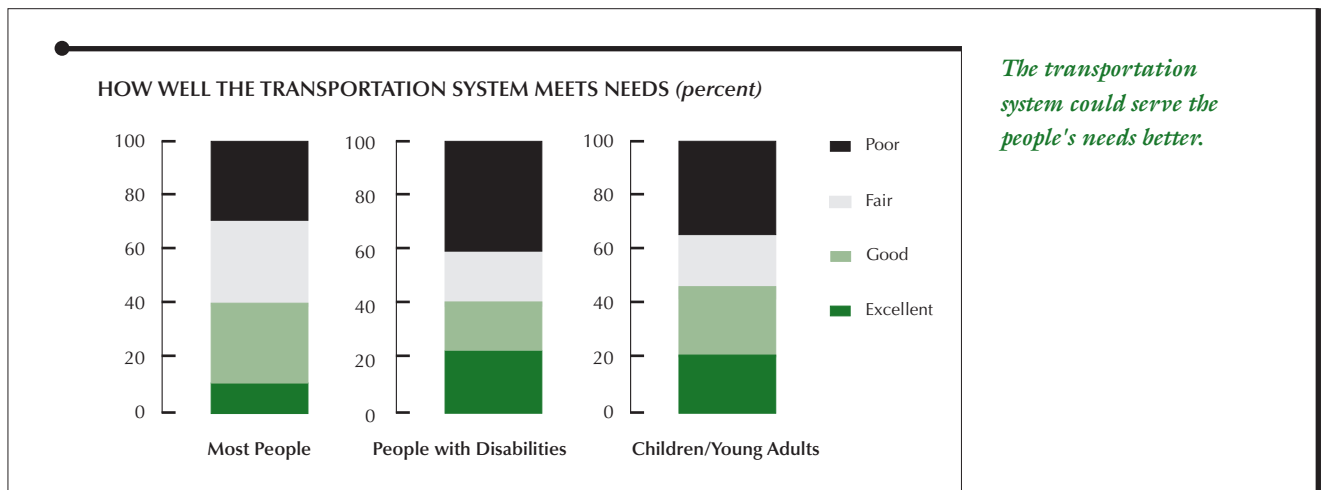
Source: Infrastructure Survey (2000)

MF9

*about six in ten respondents are satisfied  
with their community's  
transportation options*

Most respondents think their community's transportation system could improve in meeting the needs of "most people," people with disabilities, and children and young adults who do not drive:

- ~ About 60 percent rated their community's transportation system fair to poor in meeting the needs of most people, with 27 percent rating it poor.
- ~ Just 11 percent indicated that the community's transportation system is excellent for most people, while 30 percent said it is good.
- ~ Most respondents with people with disabilities or children/young adults living in their households also rated the community transportation system fair to poor in meeting their needs. For example, 60 percent gave fair or poor ratings for meeting the needs of persons with disabilities, and 56 percent gave fair or poor ratings for meeting the needs of school children and young adults who do not drive.



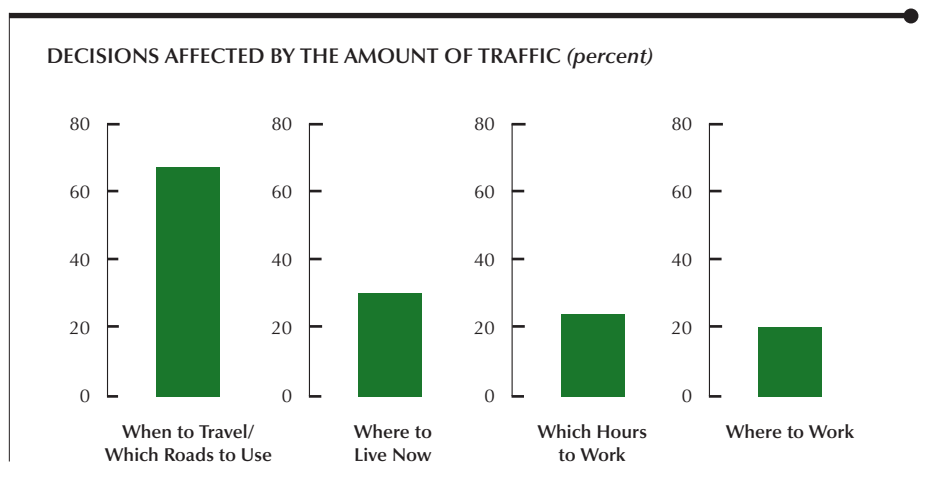
Source: Operations and Planning/Environment Survey

MF10



The amount of traffic has not only affected decisions about when to travel and which roads to use but also where to live, where to work, and which hours to work. Two in three responded that the amount of traffic affected their decisions on when to travel and which roads to use. About 20 percent of respondents indicated that traffic affected their decisions about where to work and which hours to work, and 30 percent said it affected their decision about where they live now. All of these choices affect the growth, livability, and prosperity of communities.

*Traffic affects lifestyle and work style choices.*



Source: Infrastructure Survey (2000)

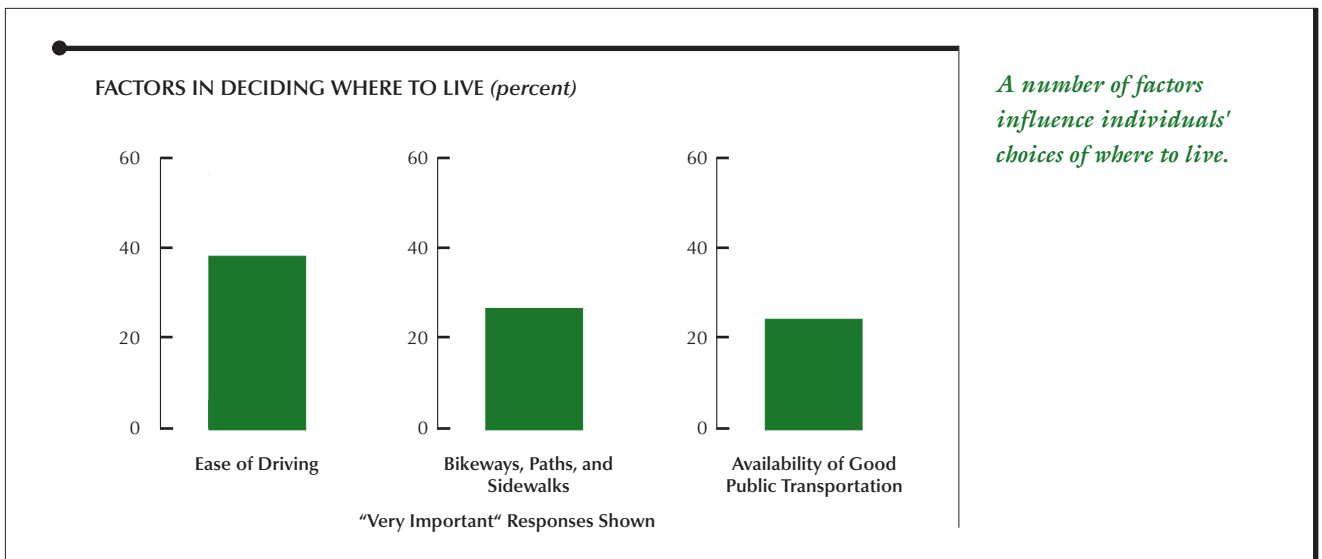
MF11

*traffic affects decisions*

about where to live  
and where to work

A variety of factors influence people's decision on where to live. This study focused only on one set of transportation related factors. All survey participants were asked to respond to how these factors influenced their decisions on where to live.

The most important factor in deciding where to live is ease of driving. Bikeways, paths, and sidewalks (26%) and the availability of good public transportation (23%) were also important considerations.



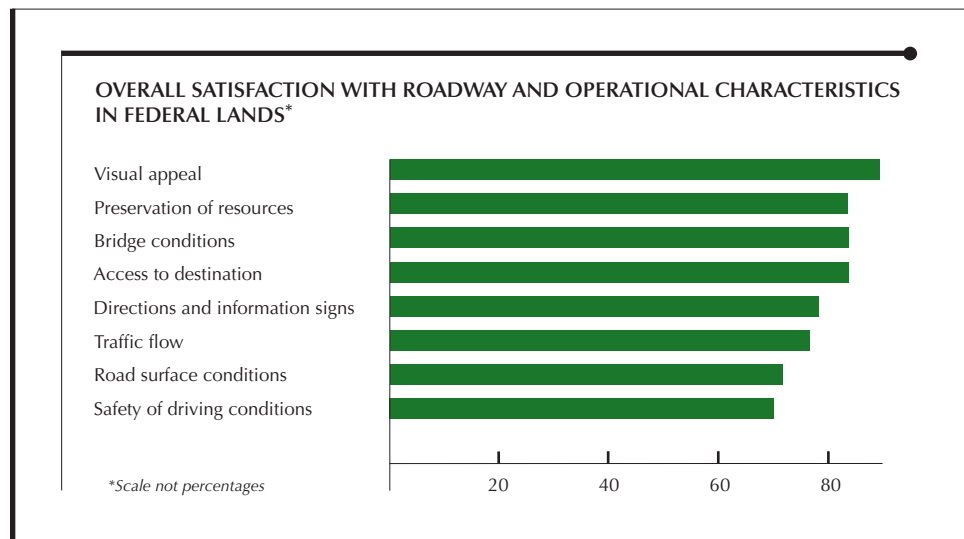
Source: Infrastructure Survey (2000)

MF12



## *Satisfaction with National Parks and Forests—Recreational Opportunities for the Nation*

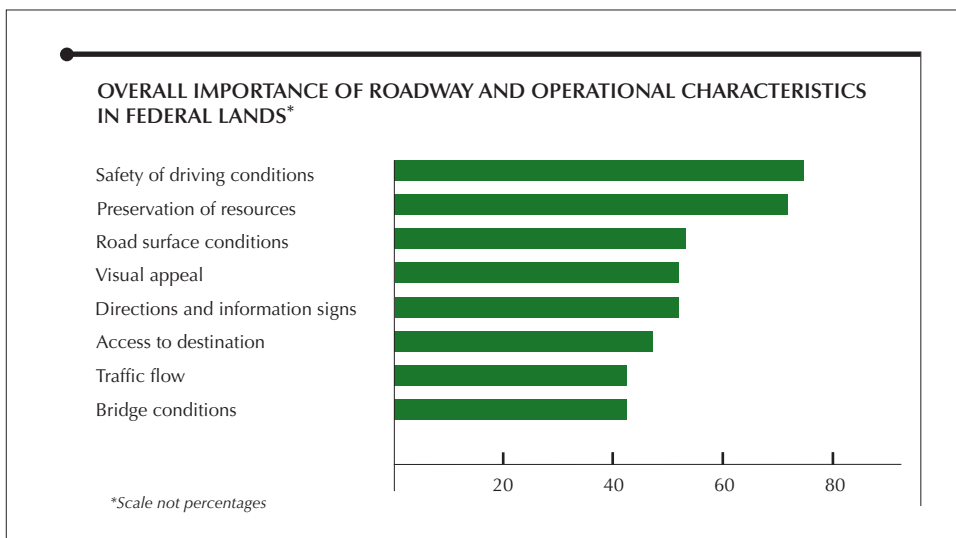
The *Federal Lands Highway Survey* of selected visitors to National Parks and Forests revealed a high level of satisfaction with a variety of roadway characteristics and features. The following chart illustrates on a 100-point scale the scores of overall satisfaction. On this scale, 0 means “very dissatisfied” and 100 means “very satisfied.” Roadway safety received the lowest satisfaction score.



Source: *Federal Lands Highway Survey*

MF13

Visitors to National Parks and Forests were also asked about the relative importance of various roadway features. They indicated that they are most concerned about safe driving conditions, especially because they may be driving larger, unfamiliar vehicles on roads not built to interstate standards. They seemed particularly interested in how signs and markings can assist them in safely navigating their routes.



Source: Federal Lands Highway Survey

MF14

Federal land roadway safety received the lowest satisfaction score, yet it ranked as the highest in overall importance. These findings give clear direction for opportunities and priorities for improvement in National Parks and Forests.

*most important characteristic for  
roadways in Federal lands...*  
safety of driving conditions

### *Suggested Improvements: Actions the Public Would Find Helpful*

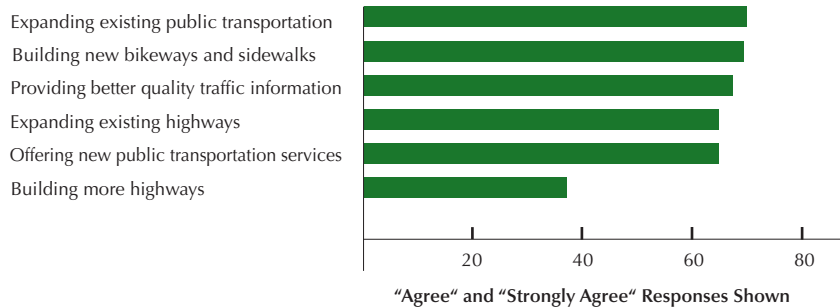
Respondents were asked if their local communities would be better served if various transportation improvements were made. The survey question did not ask about cost considerations, if the improvements would help respondents personally, or if they would use them.

When the respondents considered transportation system improvements for their community, they valued offering or expanding public transit and building new bikeways and sidewalks.

According to the survey findings, the public is much more likely to want to expand existing highways and to have better quality traffic information than to build new highways.

*Although most drive, members of the public value having other transportation options.*

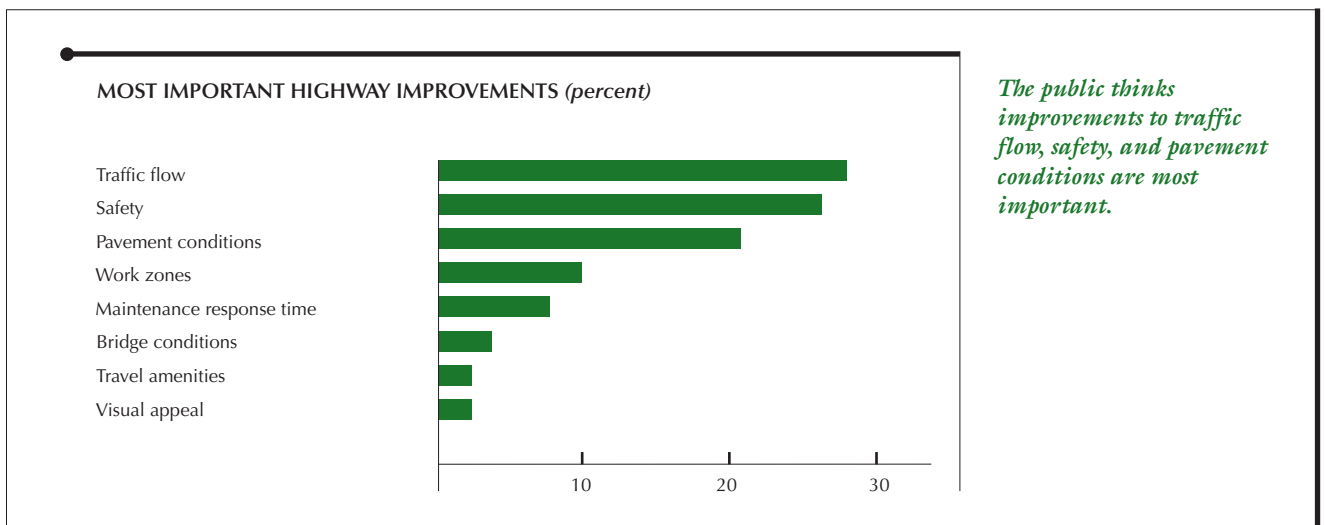
TRANSPORTATION IMPROVEMENTS THAT WOULD SERVE THE COMMUNITY (percent)



Source: Infrastructure Survey (2000)

MF15

Respondents were asked which highway characteristic should receive the most attention and resources for improvement. They chose improvements to traffic flow (28%), safety (26%), and pavement conditions (21%).



Source: Infrastructure Survey (2000)

MF16

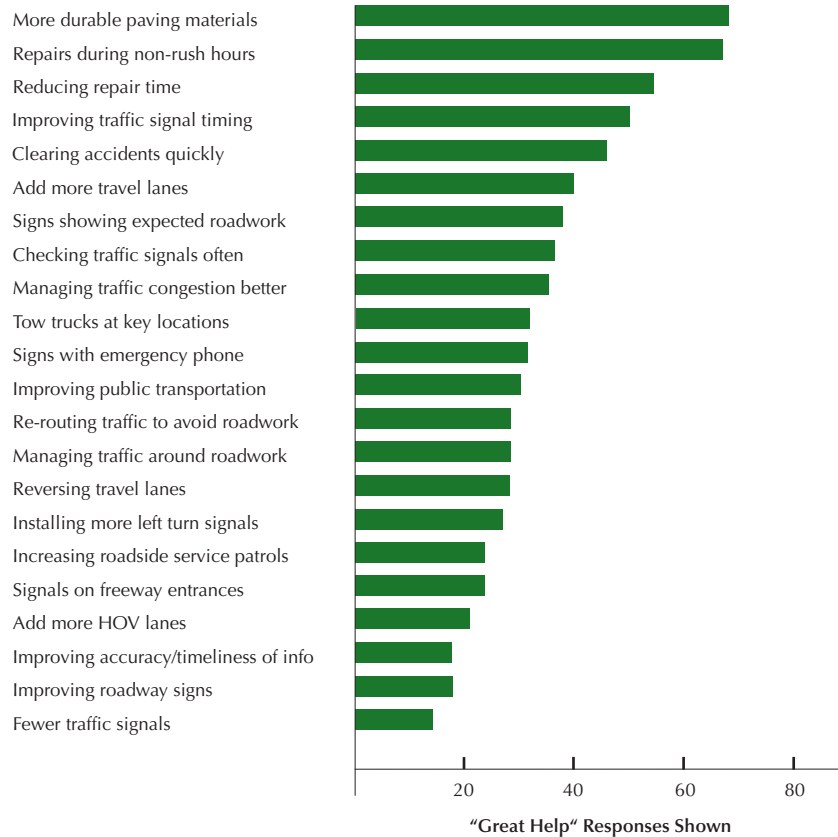
Travelers were asked to rate how a series of possible highway improvements might help them overcome the travel delay problems they experience on roadways. The three improvements mentioned most frequently as a “great help” to overcoming travel delay problems all relate to repairs: more durable paving materials (67%), repairs made during non-rush hours (66%), and reducing repair time (52%). Other important improvements are traffic signal timing (50%), clearing accidents quickly (43%), and adding travel lanes (42%).

improvements  
relating to repairs are more frequently mentioned

# preferred improvements

*Top preferred improvements relate to better management and operations.*

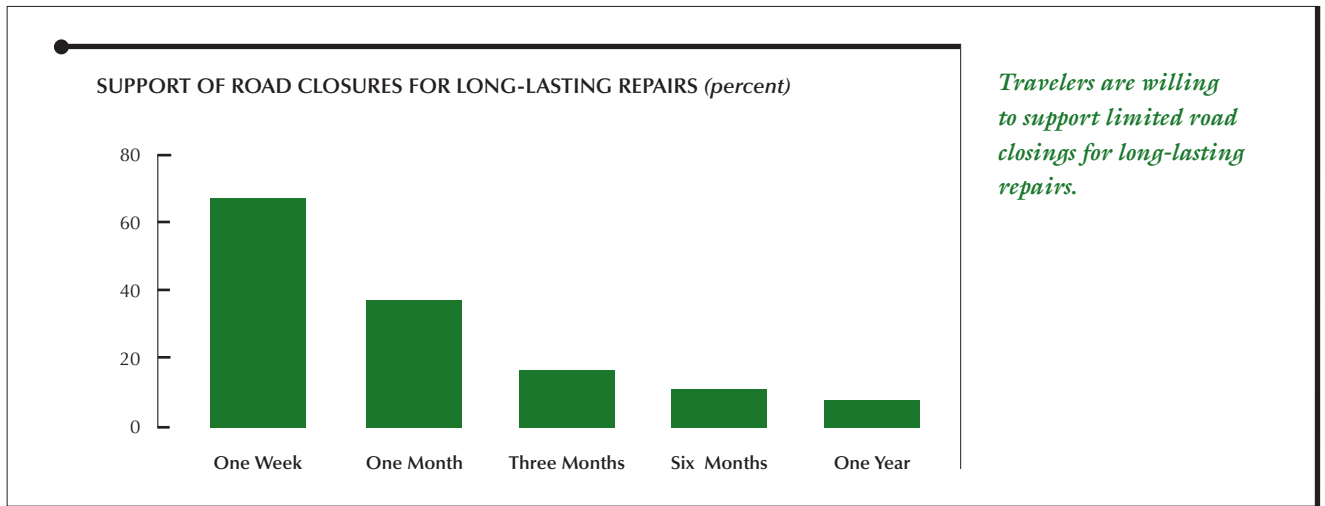
## PREFERRED TRANSPORTATION IMPROVEMENTS TO OVERCOME TRAVEL DELAY PROBLEMS (percent)



Source: Operations and Planning/Environment Survey

MF17

When asked about closing roads to make long-lasting repairs, 67 percent of respondents would support closed roads for one week, and 37 percent would support closed roads for one month. However, just 16 percent would support a three-month closing, and 10 percent or fewer would support longer closings (six months to a year).



Source: Operations and Planning/Environment Survey

MF18

*67 percent of those surveyed support  
one-week road closures to make  
long-lasting repairs*



# Study Conclusions

Most travelers are satisfied with the major highways and other roadways they travel on most often. Satisfaction with major highways, which was measured in both 1995 and 2000, has increased substantially. The greatest strengths appear to be in facility design and maintenance, including safety, bridge conditions, travel amenities, and visual appeal.

A small but growing segment of the traveling public is dissatisfied with major highways. Both travel delays, which are due to traffic congestion and roadwork, and pavement conditions may contribute to this growing dissatisfaction.

The following chart was created from the overall satisfaction levels and importance ranking responses of those surveyed. It offers guidance for programmatic improvements based on the public's relative level of satisfaction and importance. The elements are:

## ~ Focus Improvements (Higher Importance and Lower Satisfaction)

Improvements in traffic flow, pavement conditions, and work zones may result in the greatest rise in traveler satisfaction. Work zones are especially critical as travelers view road repairs as a major reason for traffic delays. A stronger community focus on the placement, design, and operation of transportation projects can enhance community quality of life and satisfaction.

## ~ Communicate Strengths (Higher Importance and Higher Satisfaction)

The public rated the safety attributes of major highways highly. Information on this strength will reinforce this positive perception and help to increase overall satisfaction.

## ~ Monitor (Lower Importance and Lower Satisfaction)

Maintenance response time, a state and local responsibility, is a potential issue that should be monitored closely.

## ~ Stay the Course (Lower Importance and Higher Satisfaction)

Bridge conditions, travel amenities, and visual appeal should be maintained as areas of strength.

*The relative importance and impact on satisfaction of actions the public would find helpful.*

#### STRATEGIC OPPORTUNITIES

	Focus Improvements	Communicate Strengths
More important	Traffic flow Pavement conditions Work zones Community-oriented improvements	Safety
Less important	Monitor Maintenance response time	Stay the Course Bridge conditions Travel amenities Visual appeal
	Less satisfied	More satisfied

More Satisfied/  
More Important

Less Satisfied/  
Less Important

SC1

Not only does congestion contribute to dissatisfaction with roadways, but it also affects decisions about where to live and work that, in turn, affect patterns of community growth and development. The placement, design, and operation of highways can affect how people perceive the quality of life in their communities.

*study results suggest...*

smarter road management  
and operation



*most helpful...*

## improve traffic flow

The study results suggest that the public would find the following helpful:

- ~ Improve traffic flow by expanding existing highways and public transit and by providing better information to travelers about traffic congestion so they can avoid it. This could involve using intelligent transportation systems and other innovations. Building more highways is a lower priority.
- ~ Encourage smarter road management and operation. For example, adopt a strategy of “get in, get out, stay out” for both roadwork and for clearing accidents. Plan and execute effectively so the work is done correctly and expeditiously the first time, resulting in less traffic disruption. Also focus on quality improvements and high performing materials to minimize the need for recurring roadwork.
- ~ Encourage greater understanding and awareness of how the placement and design of highway projects can affect the quality of life in the nation’s communities. Expand community-focused alternatives such as pedestrian walkways, bikeways, and transit.
- ~ Focus on road safety in National Parks and Forests.

# About This Study

This study is composed of three surveys that the FHWA conducted in 2000. Each survey measured public satisfaction from a slightly different perspective:

- ~ The *Operations and Planning/Environment Survey* studied the public's satisfaction and concerns with roadway transportation, recommendations for improvement, highway-related travel patterns and travel times, and the effects of transportation systems on communities.
- ~ The *Infrastructure Survey* was based on the 1995 *NQI National Highway User Survey*. It looked at changes in the public's satisfaction with specific characteristics of the nation's roads. It also included questions focused on satisfaction from a community perspective.
- ~ The *Federal Lands Highway Survey* gathered customer feedback regarding access to and within Federal lands. The survey measured satisfaction with and the importance of a comprehensive set of roadway characteristics. The findings supplement other Federal Lands Highway measures.

Taken together, these surveys form a more complete picture of the public's satisfaction with the roadways and transportation in communities.

## *Survey Design and Administration*

The FHWA designed and administered each survey to meet the specific needs of its sponsoring organization. For example:

- ~ The *Operations and Planning/Environment Survey* focused on establishing a baseline for traditional and emerging issues. A wide-ranging questionnaire was designed to assess nationwide perspectives on general highway operations, travel patterns, work zones, signals, accidents, congestion, and effects of transportation systems on communities.
- ~ The *Infrastructure Survey* consisted of two forms to manage survey length but still assess a wide variety of topics. One form compared satisfaction levels with the elements of the 1995 *NQI National Highway User Survey*; the other form assessed satisfaction from a community perspective. The U.S. Department of Transportation's Bureau of Transportation Statistics assisted in the design and administration of this survey.
- ~ The *Federal Lands Highway Survey* was conducted on-site with drivers at six National Parks and six National Forests to determine the gap between satisfaction and the importance of roadway characteristics.

# each survey measured public satisfaction with roadway characteristics...

The following table provides a more detailed description of how the FHWA designed and administered each survey.

## SURVEY DESIGN, ADMINISTRATION, AND SAMPLE

	Operations and Planning/ Environment Survey	Infrastructure Survey	Federal Lands Highway Survey
Survey Design	<p>Participants were asked 29 survey questions and 15 screening/demographic questions.</p> <p>Likert-scale,<sup>1</sup> randomized multiple choice, and open-ended questions were used.</p>	<p>Participants were asked 17 survey questions in Form A, 21 survey questions in Form B, and 21 screening/demographic questions.</p> <p>Likert-scale and randomized multiple-choice questions were used.</p>	<p>Participants were asked 9 survey questions and 8 demographic questions.</p> <p>Likert-scale questions were used.</p>
Survey Administration	<p>A Random Digit Dial (RDD) telephone survey was conducted with U.S. adults (aged 18 and older) between June 21 and July 1, 2000. CATI (Computer Assisted Telephone Interview) technologies were used to enhance data collection and facilitate data coding and analysis.</p> <p>In each household called, the individual with the most recent birthday and over the age of 18 was selected to answer the survey questions.</p> <p>Average completion time was 24 minutes.</p>	<p>An RDD telephone survey was conducted with U.S. adults (aged 18 and older) between May 31 and June 25, 2000. CATI technologies were used to enhance data collection and facilitate data coding and analysis.</p> <p>The participating household member was selected randomly from a list of the household members' initials.</p> <p>Average completion time was 13 minutes.</p>	<p>Direct personal interviews were conducted at six National Parks and six National Forests between May 25 and August 29, 2000. Randomized versions of the questionnaire were used to eliminate response bias. Interviewers recorded responses in the field.</p> <p>The driver of each participating traveling party was interviewed.</p> <p>Interviews generally took 5 minutes or less.</p>
Population Sampling	<p>A sample was selected to be representative of the nine Census Divisions.</p> <p>A sample size of 11,969 resulted in 2,057 completed surveys. This size produces a margin of error of <math>\pm 2\%</math>.</p> <p>The non-response rate was 27%.</p>	<p>A sample was selected so that survey results could be used to make inferences about adults in the U.S. household population. The sample was based on the nine Census Divisions.</p> <p>A sample size of 9,089 resulted in 2,030 completed surveys. This produced a margin of error of <math>\pm 2\%</math>.</p> <p>The non-response rate was 16%.</p>	<p>Specific locations to conduct interviews were randomly selected from a list of locations that travelers visit for recreational activities. In addition, travelers were randomly selected according to the time that they entered a specific location.</p> <p>A sample of at least 96 travelers was interviewed at each site. A total of 1,236 travelers were interviewed. This produced a margin of error of <math>\pm 3\%</math>.</p> <p>The non-response rate was less than 1%.</p>

<sup>1</sup> A Likert-scale is a continuum of responses where the low end represents a negative response and the high end represents a positive response.

## Profile of Respondents

In each survey, the FHWA asked participants questions about themselves to create a profile of respondents. This information helped to determine satisfaction levels and the needs of particular population subgroups. The following table shows the profile of respondents for each of the three surveys conducted.

SURVEY RESPONDENT PROFILE (percent)

Population Subgroup		Population Estimate	Operations and Planning/Environment Survey	Infrastructure Survey		Federal Lands Highway Survey
		1999	2000	2000	1995*	2000
Total		272,691,000	2,057	2,030	2,205	1,236
Gender and Age	Male	49	48	41	49	72
	Female	51	52	59	51	28
	18-34	23	24	27	35	24
	35-54	30	41	42	38	55
	55+	21	35	31	26	21
Residence by Census Region	North East	19	19	21	15	8
	Mid-West/North Central	23	23	24	27	13
	South	35	35	34	35	30
	West	23	23	21	23	42
	Other – Int'l	NA	NA	NA	NA	7
Primary Trip and Vehicle Type	Commute to/from Work/School		51	NA	30	NA
	For Business		6	NA	14	4
	Shopping/Errands		27	NA	26	NA
	Recreation		11	NA	30	94
	Other		5	NA	0	2
	Car		65	67	66	21
	Van		7	9	9	11
	SUV		8	8	5	23
	Truck		19	12	17	15
	Oversized		NA	NA	NA	28
	Other		0	3	3	2

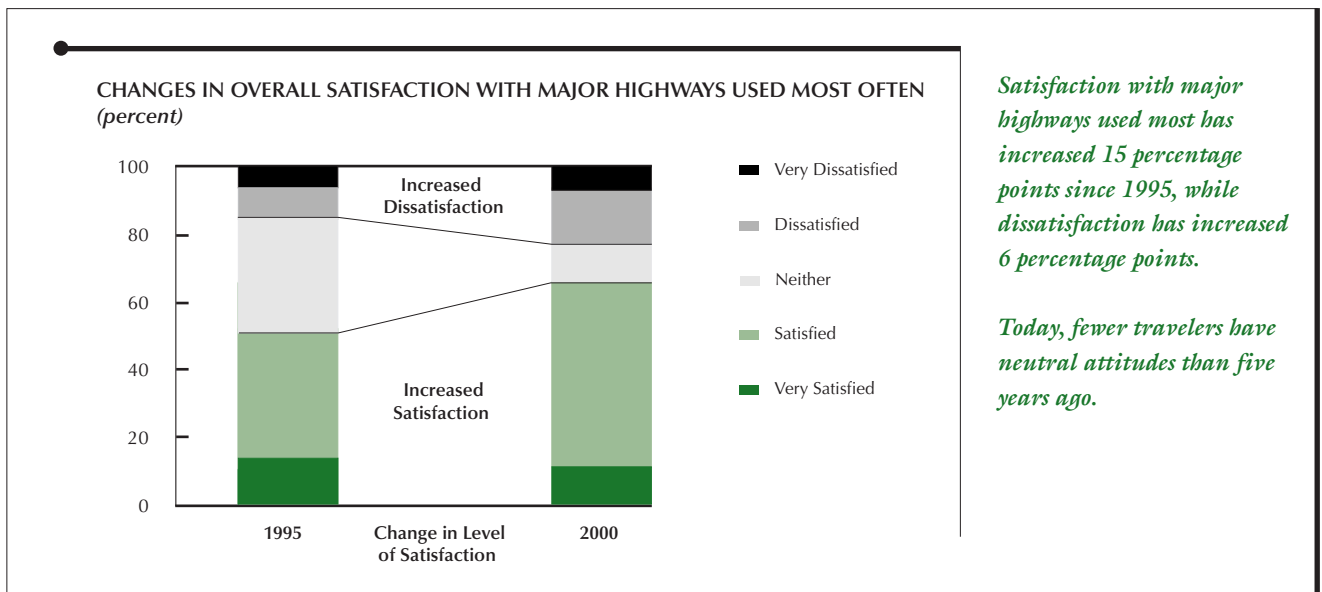
\*The 1995 study was conducted as the NQI National Highway User Survey.  
NA = Not applicable

# Appendix

This appendix provides additional information on the public's satisfaction with the attributes of major highways. It begins with a recap of the findings on overall satisfaction with major highways for the reader's convenience.

## *Overall Satisfaction with Attributes of Major Highways*

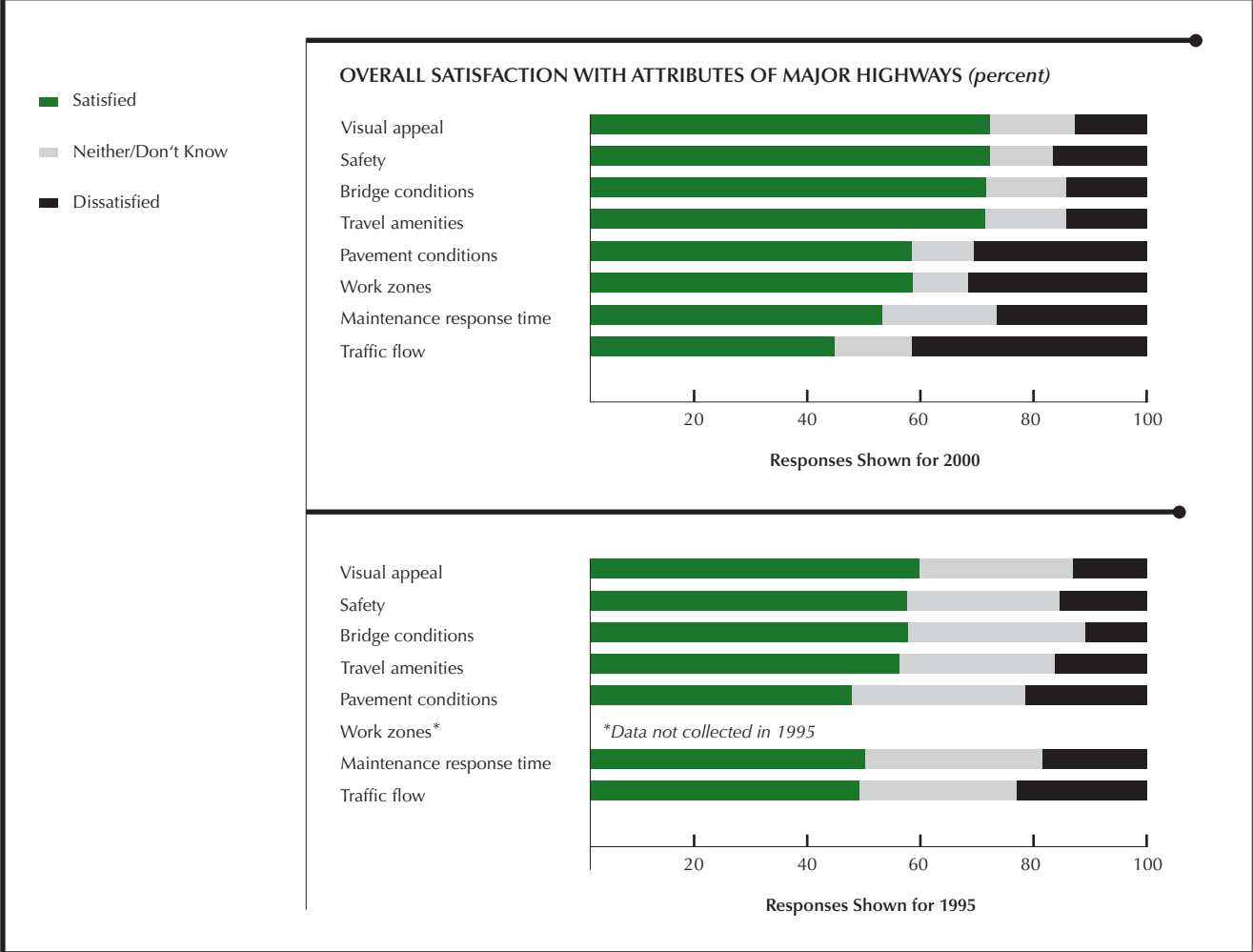
Highway travelers were asked to rate their satisfaction with the major highways they used most often in 1995 and 2000. There was a substantial 15 percentage point increase in satisfaction since 1995. There was also a 6 percentage point increase in dissatisfaction. Compared with attitudes five years ago, fewer travelers have neutral attitudes about the major highways they use.



Sources: Infrastructure Survey (2000)  
NHI National Highway User Survey (1995)

MF3

Travelers gave the major highways that they use most often high marks—much higher in 2000 than in 1995—on the attributes of visual appeal, safety, bridge conditions, travel amenities, and pavement conditions. However, there has been minimal improvement in the ratings of maintenance response time and a decrease in ratings for traffic flow. In addition, there was a 20 percentage point increase in dissatisfaction with traffic flow from 1995 to 2000.

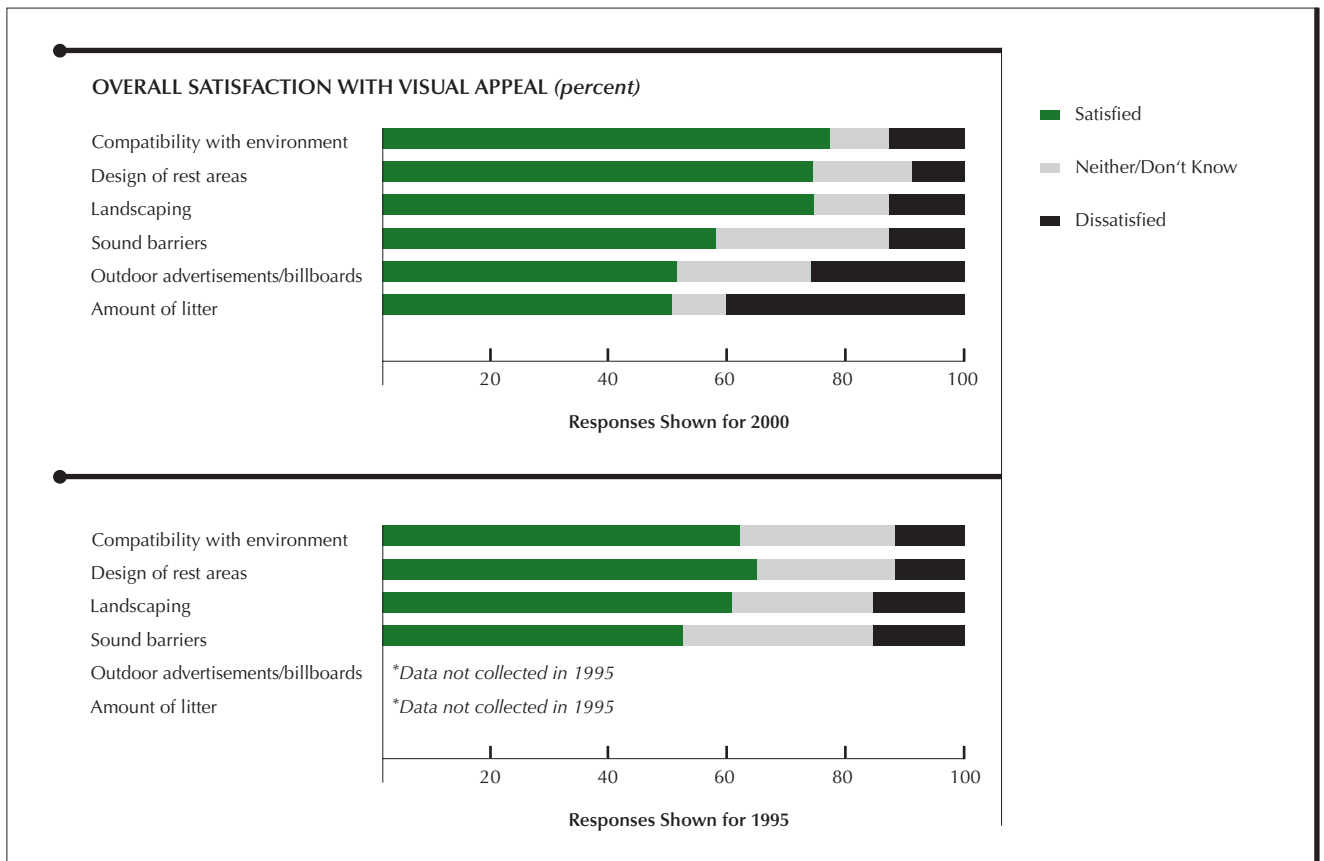


Sources: Infrastructure Survey (2000)  
NQI National Highway User Survey (1995)



Individual elements of each highway attribute were also measured in both 1995 and 2000. The figures that follow present this detailed information. Elements that were not measured in 1995 are noted.

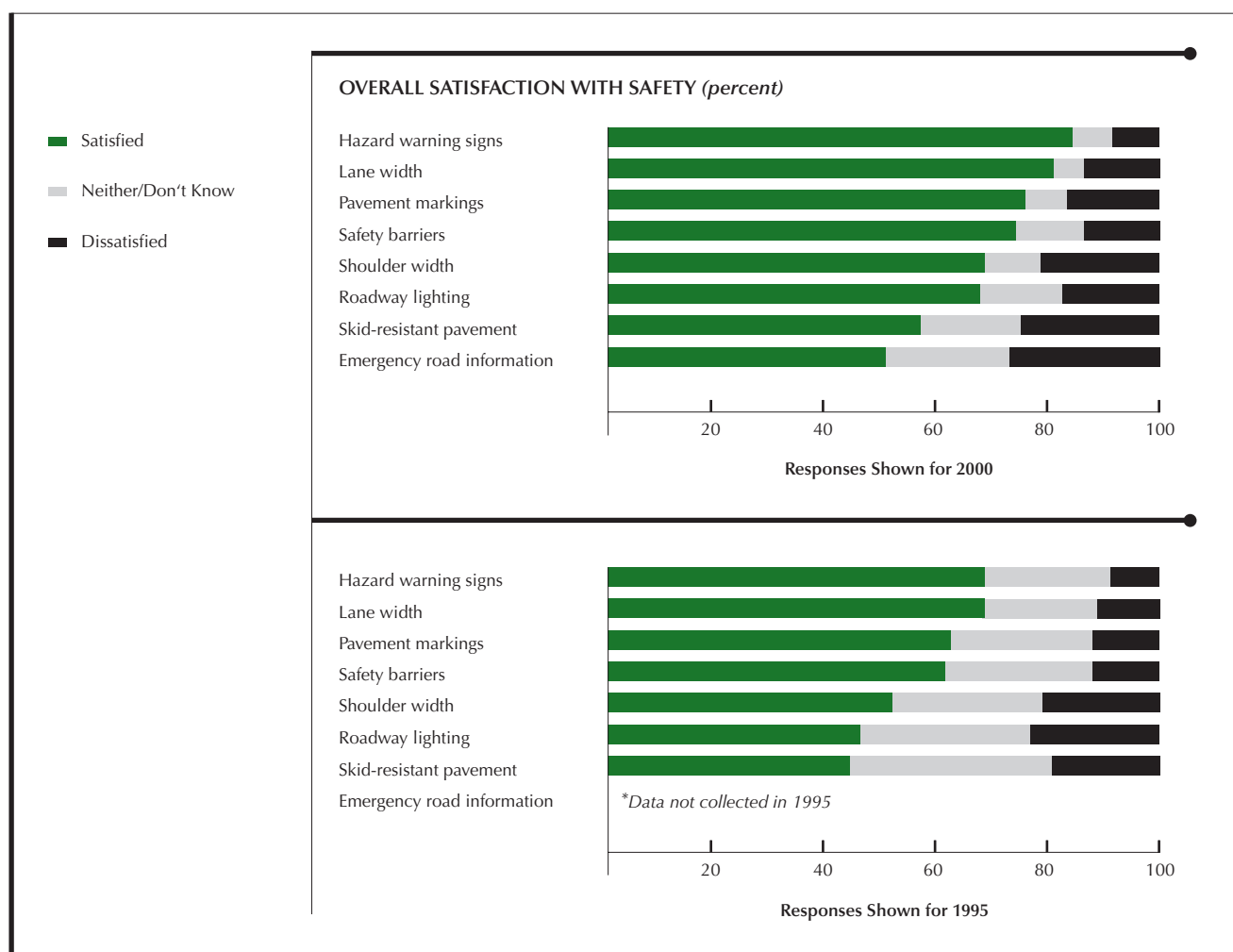
Satisfaction with all elements of *visual appeal* increased from 1995 to 2000. The public was most satisfied with compatibility with environment, an increase of 16 percentage points; design of rest areas, an increase of 11 percentage points; and landscaping, an increase of 15 percentage points. The public's dissatisfaction with compatibility with environment increased slightly. They were dissatisfied with outdoor advertisements/billboards and amount of litter, two elements not measured in 1995.



Sources: Infrastructure Survey (2000)  
 NQI National Highway User Survey (1995)

A7

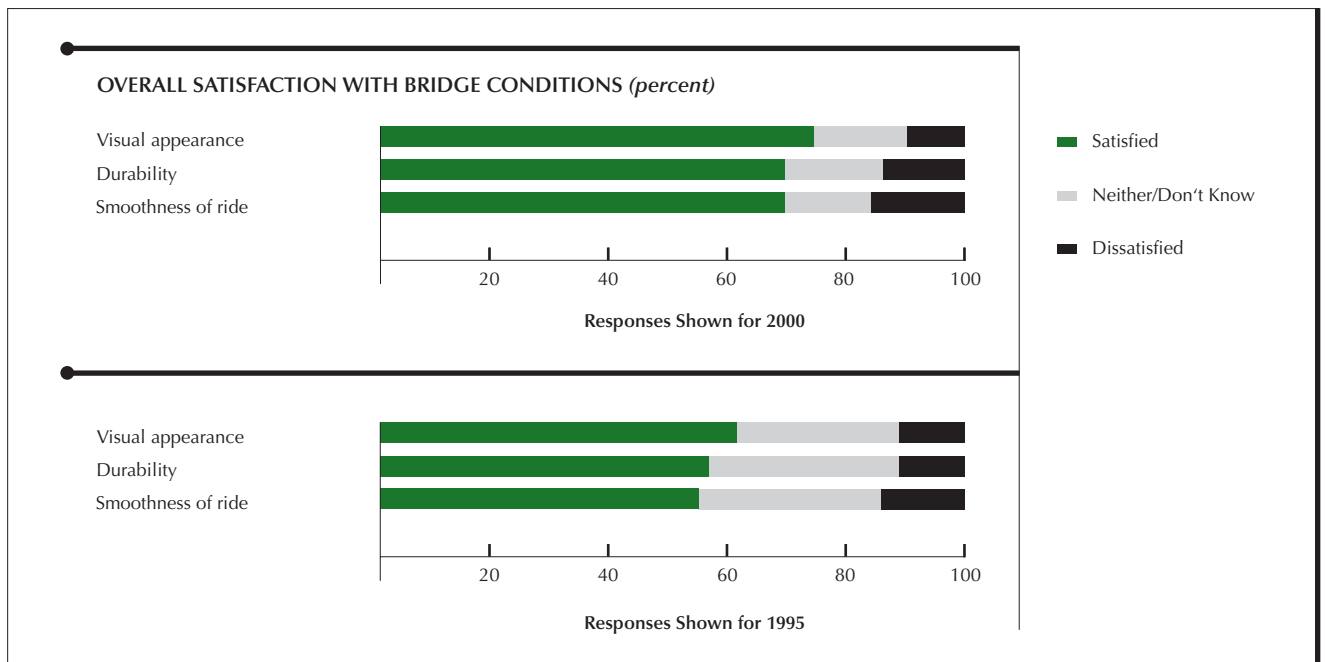
All elements of *safety* increased in satisfaction from 1995 to 2000. The public was most satisfied with hazard warning signs, shown by an increase of 16 percentage points. Roadway lighting and skid-resistant pavement increased slightly in dissatisfaction.



Sources: Infrastructure Survey (2000)  
 NQI National Highway User Survey (1995)

A3

Satisfaction with all elements of *bridge conditions* increased from 1995 to 2000. The public was most satisfied with visual appearance, shown by an increase of 14 percentage points. The public's dissatisfaction with durability and with smoothness of ride increased slightly.

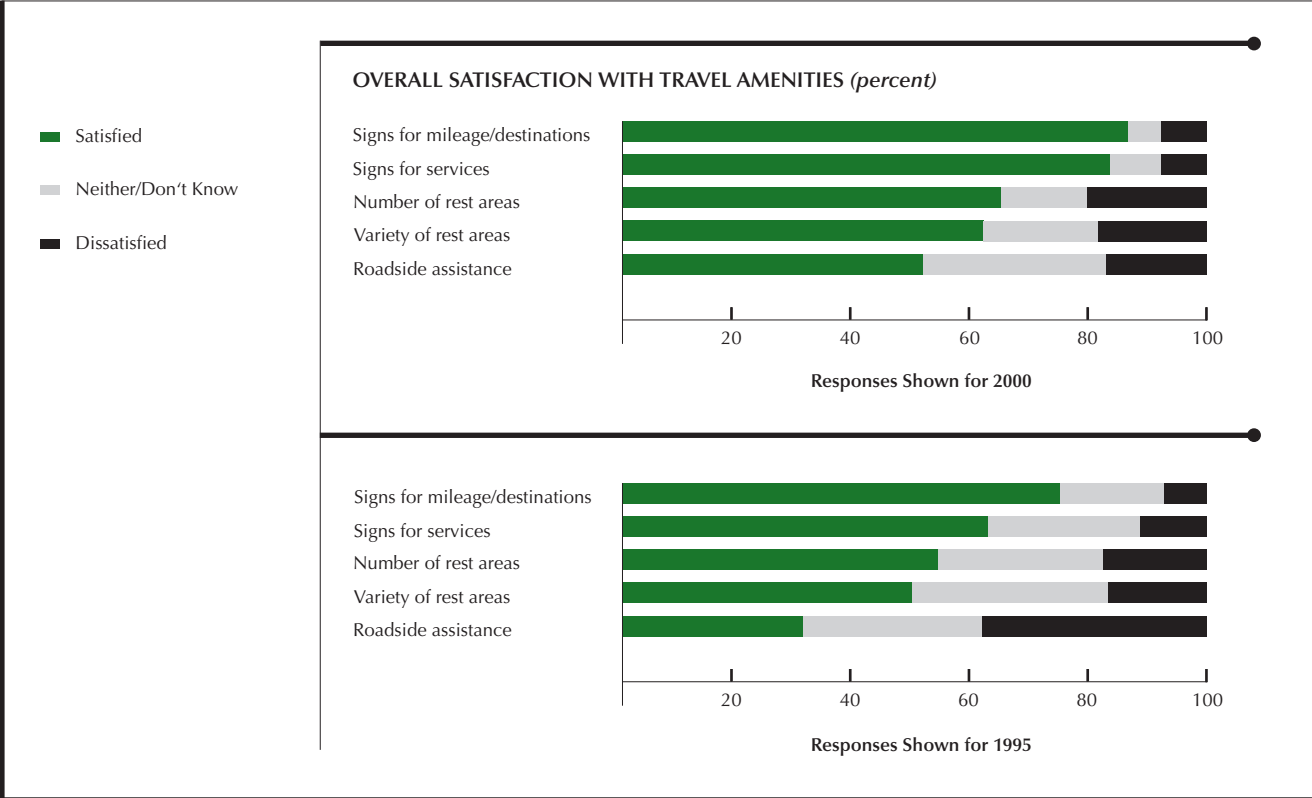


Sources: Infrastructure Survey (2000)  
 NQI National Highway User Survey (1995)

A6

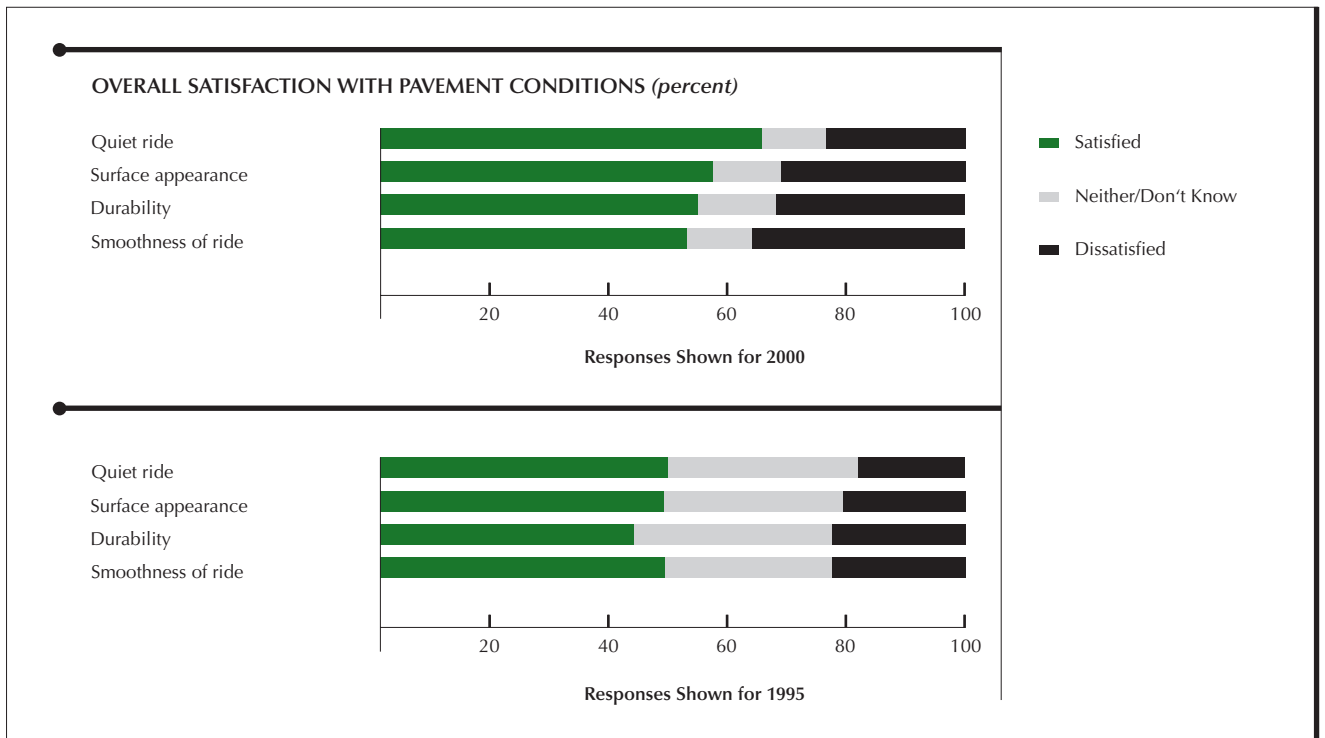
*bridge conditions have increased*  
 in satisfaction since 1995

All elements of *travel amenities* increased in satisfaction from 1995 to 2000. The public was most satisfied with signs for mileage/destinations, shown by an increase of 12 percentage points, and with signs for service, shown by an increase of 20 percentage points. The public's dissatisfaction with signs for mileage/destinations and with number of rest areas also increased. There was a large decrease (21 percentage points) in dissatisfaction with roadside assistance.



Sources: Infrastructure Survey (2000)  
NQT National Highway User Survey (1995)

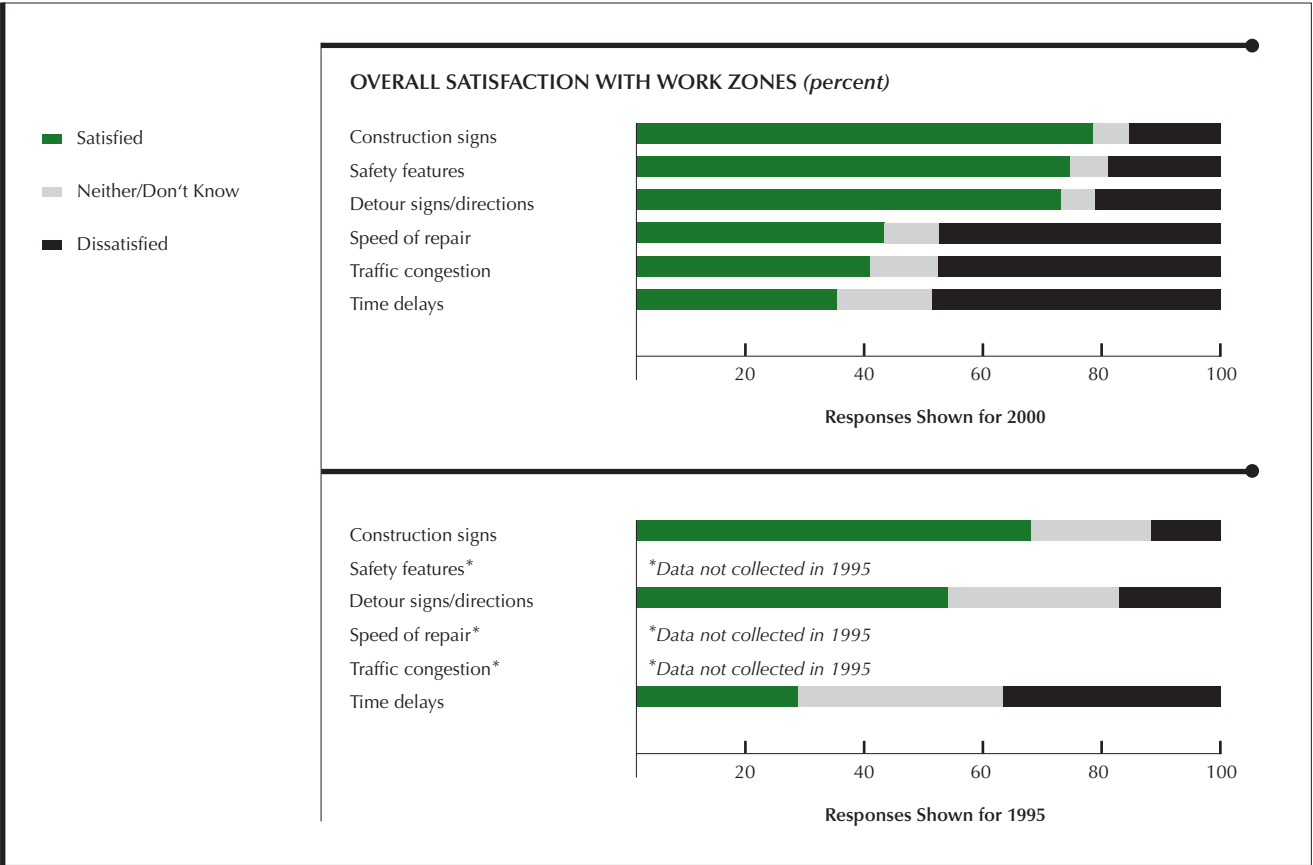
Satisfaction with all elements of *pavement conditions* increased from 1995 to 2000. The public was most satisfied with quiet ride, shown by an increase of 16 percentage points. The public's dissatisfaction with pavement conditions also increased significantly, especially with smoothness of ride.



Sources: Infrastructure Survey (2000)  
 NQI National Highway User Survey (1995)

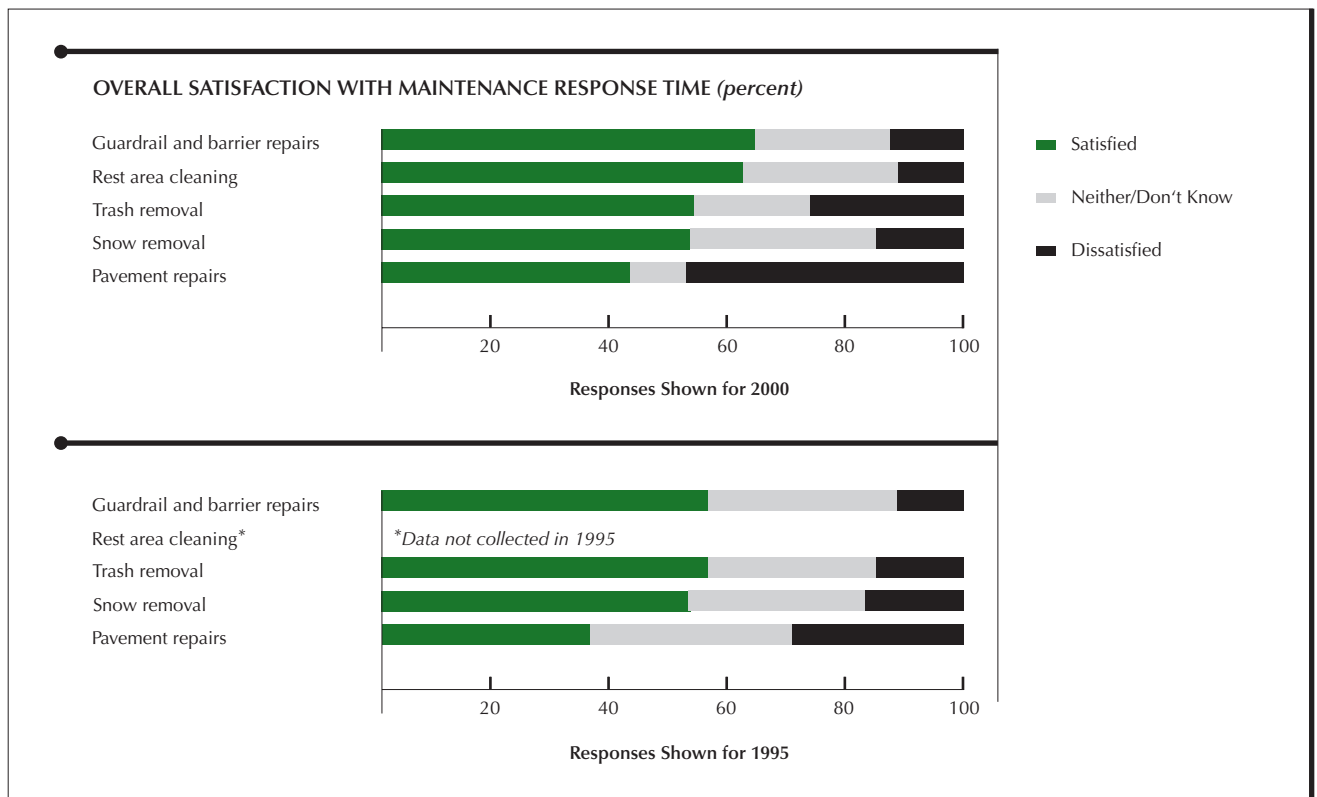
A5

The overall *work zone* category was not measured in 1995, but several elements of it were. The public was most satisfied with construction signs, shown by an increase of 12 percentage points; safety features, which was not measured in 1995; and detour signs/directions, an increase of 19 percentage points. The public was least satisfied with speed of repair, time delays, and traffic congestion in work zones.



Sources: Infrastructure Survey (2000)  
NQT National Highway User Survey (1995)

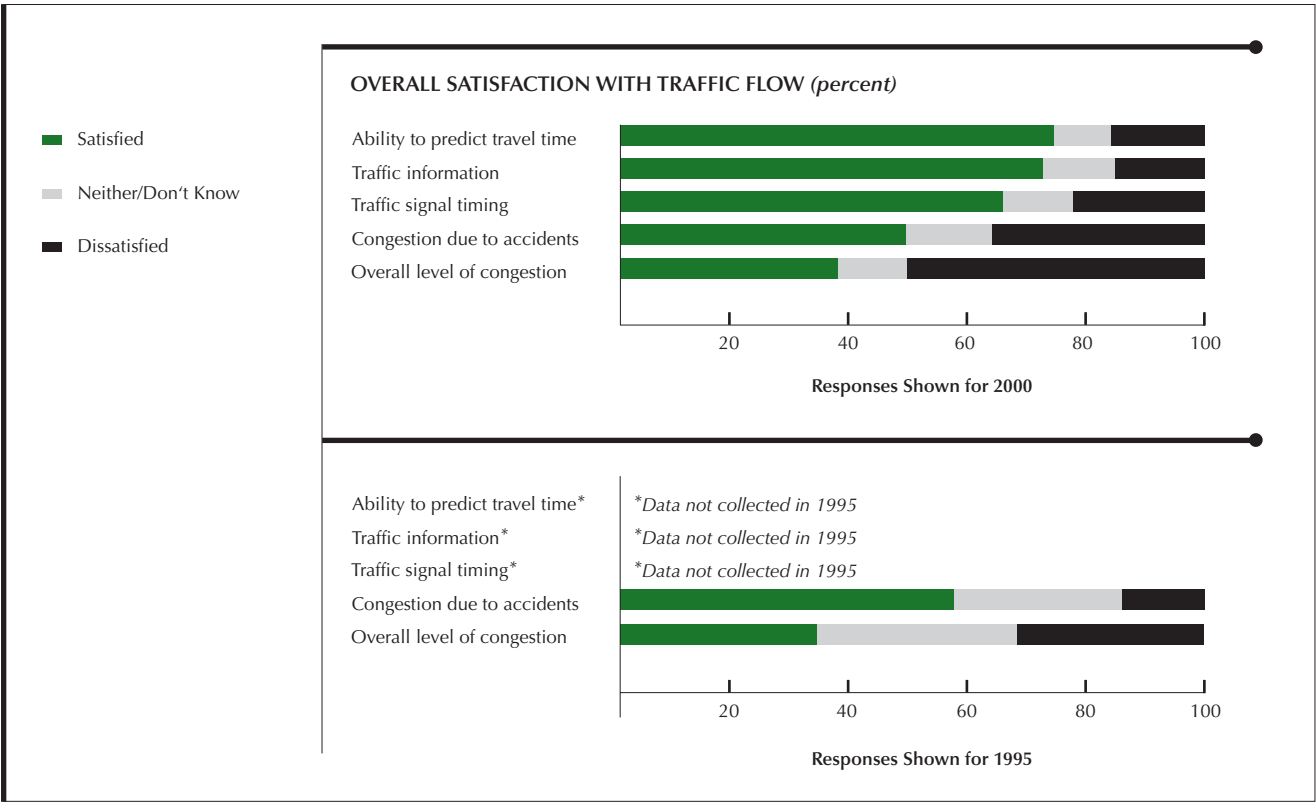
Two elements of *maintenance response time* increased in satisfaction from 1995 to 2000. The public was most satisfied with guardrail and barrier repairs, shown by an increase of 9 percentage points. The public's dissatisfaction with trash removal increased slightly. They were least satisfied with response time to pavement repairs, shown by an increase of 18 percentage points. (Maintenance response time is a state and local responsibility.)



Sources: Infrastructure Survey (2000)  
 NQI National Highway User Survey (1995)

A8

Many elements of *traffic flow* measured in 2000 were not measured in 1995. In 2000, the public was most satisfied with the ability to predict travel time and with traffic information, which were not measured in 1995. The public was least satisfied with the overall level of congestion, shown by a 17 percentage point increase in dissatisfaction.



Sources: Infrastructure Survey (2000)  
NQT National Highway User Survey (1995)



